UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/882,520	06/15/2001	Dong Il Han	2080-3-26	9939

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EXAMINER
CHEN, PO WEI

ART UNIT	PAPER NUMBER
2697	3

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-20_ is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-20_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

     If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All b)☐ Some * c)☐ None of:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

       3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
          application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

     a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .   6) ☐ Other: .

DETAILED ACTION

Claims 1-20 are pending in this application. Claims 1, 4, 7 and 14 are independent claims. This

action is non-final

The present title of the invention is "Apparatus and Method for Correcting Keystone Distortion".

The Group Art Unit of the Examiner case is now 2697. Please use the proper Art Unit number to

help us serve you better.

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1.   Claims 1, 4, 7 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by West et

al. (US 6,339,434; refer to as West herein).

2.   Regarding claim 1, West discloses an image scaling circuit comprising:

An apparatus for correcting keystone distortions in a display system ("Fig. 9 illustrates

the effect of the image warping function when used for aspect ratio conversion", see lines 6-7 of

column 3);

A horizontal size generator that receives N horizontal sync signals of an input image and

generates N corresponding horizontal output sizes, each of said output sizes being generated at

each of said sync signals based on a horizontal input size, a vertical size, and a desired keystone

factor of said input image ("Keystone correction involves incrementing or decrementing the

horizontal down sample value M and start position at each line. The vertical down sample value

M is also incremented or decremented each line to preserve the aspect ratio of the image from

top to bottom" and "The vertical and horizontal sample rate converters 21 and 22, as mentioned

above, scale the captured image up or down to any arbitrary resolution", see lines 4-62 of column

7 and lines 66-67 of column 9 and line 1 of column 10 and Fig. 11). Also see lines 21-37 of

column 3 and Fig. 1.

3.   A format converter that receives said input image and generates an output image, each

line of said output image now having said corresponding horizontal output size, where N

represents a total number of lines of said output image ("Keystone correction involves

incrementing or decrementing the horizontal down sample value M and start position at each

line. The vertical down sample value M is also incremented or decremented each line to

preserve the aspect ratio of the image from top to bottom" and "The vertical and horizontal

sample rate converters 21 and 22, as mentioned above, scale the captured image up or down to

any arbitrary resolution", see lines 4-12 of column 7 and lines 66-67 of column 9 and lines 1-15

of column 10 and Fig. 11). It is noted that the vertical and horizontal sample rate converters

scale each line of the image to the desired resolution format according to the keystone correction

amount. Thus, limitation of claim is met.

4.   Regarding claims 4, 7 and 14, the statement presented, above, with respect to claim 1 is

incorporated herein.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 10-13 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over West et al. (US 6,339,434; refer to as West herein) as applied to claims 7 and 14 above.

7.   Regarding claims 10-13, it is noted that West does not specifically disclose the horizontal output size of a specific line being larger or smaller than other lines in the image. However, West teaches a "keystone correction involves incrementing or decrementing the horizontal down sample value M and start position at each line…the following equations can be used to calculate the increment/decrement amounts based on a desired angle of keystone correction" (see lines 4-62 of column 7). It would have been obvious to one of ordinary skill in the art at the time of invention to realize that by utilizing the teaching of West, each line is incremented or decremented based on the desired angle of keystone correction. Thus, depending on the desired angle of keystone correction, each line can have a larger or smaller or the same size with other lines in the image. Thus, limitations of the claims are met.

8.   Regarding claims 17-20, the statement presented, above, with respect to claims 10-13 is incorporated herein.

9.   Claims 2-3, 5-6, 8-9 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over West et al. (US 6,339,434; refer to as West herein) as applied to claims 1, 4, 7 and 14 above, and further in view of Furuhashi et al. (US 5,909,205; refer to as Furuhashi herein).

10.   Regarding claim 2, West discloses an image scaling circuit comprising:

A sync signal generator that generates control signals based on said sync signals and said

horizontal output sizes ("The display controller 150 generates timing signals to control

the pixilated output display device", see lines 30-31 of column 10). It is noted that the display

controller generates timing signals based on horizontal sample rate converters (element 22 of

Fig. 11) which include the function to scale the size of the input signal from frame buffer

(element 125 of Fig. 11). Also see lines 66-67 of column 9 and lines 1-5 of column 10. Thus

limitation of claim is met;

It is noted that West does not disclose a line memory that stores each line of said output

image generated from said format converter and outputs said stored line of said output image

according to said read control signals. However, this is known in the art taught by Furuhashi.

Furuhashi discloses a liquid crystal display control device which "The A/D convertor 104

digitizes an analog video signal 102 output from the personal computer 101, and then outputs the

digitalized signal as a digital video signal 105 to the frame memory 110...The data which are

temporarily stored in the frame memory 110 are output to the enlargement processing control

circuit 118 and the line memory 111" and "The operation of the memories 110 and 111 is

controlled by the frame memory control signal 113 and the line memory control signal 114

which are input from the frame/line memory control circuit 112", see lines 1-54 of column 7 and

Fig. 1). It would have been obvious to one of ordinary skill in the art to utilize the teaching of

Furuhashi to provide the function of line-by-line data processing and a way to control memories

in a well-known manner. Because West shows outputting the processed data to a conventional

display (Fig. 13; such as a 'Flat panel monitor', see lines 52-53 of column 10) and Furuhashi

discloses such a conventional monitor. The use of a line memory provides a way to store the

data for display.

It is also noted that West does not disclose a read control signal. However, this is known

in the art taught by Furuhashi. Furuhashi discloses a liquid crystal display control device which

"The operation of the memories 110 and 111 is controlled by the frame memory control signal

113 and the line memory control signal 114 which are input from the frame/line memory control

circuit 112", see lines 51-54 of column 7 and Fig. 1). It would have been obvious to one of

ordinary skill in the art to utilize the teaching of Furuhashi to provide the function of controlling

memories in a well-known manner. Because it is necessary to have control signals to read (and

write) data from (to) a memory and West does show using memories for storing data.

11.   Regarding claim 3, West discloses an image scaling circuit comprising:

A sync signal generator that generates control signals based on said sync signals and said

horizontal output sizes ("The display controller 150 generates timing signals to control the

pixilated output display device", see lines 30-31 of column 10). It is noted that the display

controller generates timing signals based on horizontal sample rate converters (element 22 of

Fig. 11) which include the function to scale the size of the input signal from frame buffer

(element 125 of Fig. 11). Also see lines 66-67 of column 9 and lines 1-5 of column 10. Thus

limitation of claim is met;

A line memory that stores each line of said input image and outputs said stored line of

said input image to said format converter ("If a line memory buffer 80 is used, each buffer

contains the data from a row of data with the nth pixel of each row to be factored available at the

same time to a multiplexer. In the preferred embodiment, the nth pixel of each row is read

directly from memory. The output pixel value is then calculated using multipliers 82 and adders

83", see lines 24-43 of column 5 and Fig. 7B). It is noted that West discloses a sample rate

converter for a vertical column of data in Fig. 7B. In the system, the input value into line

memory and then output to perform the function of converting the vertical scaling. Thus,

limitation of claim is met.

It is noted that West does not disclose a read control signal. However, this is known in

the art taught by Furuhashi. Furuhashi discloses a liquid crystal display control device which

"The operation of the memories 110 and 111 is controlled by the frame memory control signal

113 and the line memory control signal 114 which are input from the frame/line memory control

circuit 112", see lines 51-54 of column 7 and Fig. 1).

12.   Regarding claims 5-6, 8-9 and 15-16, the statement presented, above, with respect to

claims 2-3 is incorporated herein.

Conclusion

13.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Dresdner (US 4,667,236) discloses "Television Perspective Effects System".

Cahill, III (US 5,831,592) discloses "Scaling Image Signals Using Horizontal Pre

Scaling, Vertical Scaling, and Horizontal Scaling".

Narui (US 6,411,267) discloses "Monitor Adjustment by Data Manipulation".

Inquiry

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Po-Wei (Dennis) Chen whose telephone number is (703) 305-

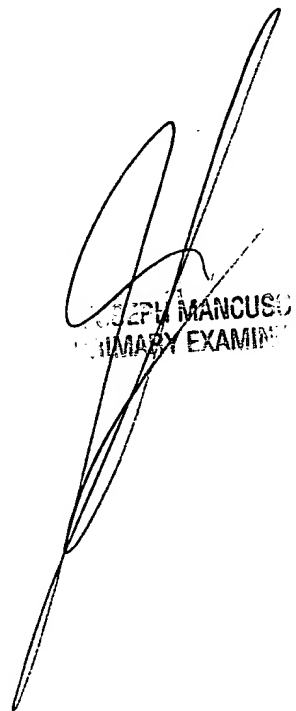8365. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jeffrey Hofsass can be reached on (703) 305-4717. The fax phone numbers for the

organization where this application or proceeding is assigned are (703) 308-6743 for regular

communications and (703) 308-6743 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703) 305-3900.

Po-Wei (Dennis) Chen
Examiner
Art Unit 2697

Po-Wei (Dennis) Chen
May 13, 2003

JEPH MANCUSO
PRIMARY EXAMINER